DECISION SUPPORT SYSTEMS ADOPTION AMONG STRATEGIC DECISION MAKERS IN HIGHER LEARNING INSTITUTIONS IN YEMEN

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Abstrak

Institusi pengajian di Yaman tidak mempunyai visi, misi dan objektif strategi yang jelas, yang mana institusi ini mengamalkan sistem pengurusan secara tradisi dengan prosedur yang kompleks. Tambahan pula, terdapat sikap tidak ambil peduli terhadap teknologi dalam kalangan pembuat keputusan strategi di Yaman kerana mereka tidak mempunyai pandangan yang jelas tentang apa aplikasi Teknologi Maklumat (IT) yang mampu menyumbang ke arah pembangunan institusi mereka. Oleh itu, kajian ini bertujuan untuk mengenal pasti keputusan strategi pengajian tinggi di Yaman dan gaya pembuat keputusan strategi oleh pembuat keputusan strategi serta menyiasat tanggapan oleh pembuat keputusan strategik terhadap teknologi *decision support systems* (DSS). Bagi tujuan ini, *Unified Theory of Acceptance and Use of Technology* (UTAUT) digunakan. Sejumlah 121 borang soal selidik telah dikutip daripada sekumpulan pembuat keputusan strategik di Universiti Sana'a dan Universiti Sains dan Teknologi. Analisis deskriptif, pemodelan regresi dan analisis modelpersamaan berstruktur telah dijalankan bagi menguji hipotesis. Kajian ini mendapati bahawa dasar penyelidikan, penggunaan aplikasi teknologi maklumat, kurikulum, misi, organisasi kolej dan universiti, dasar kemasukan, dasar kewangan, kemudahan dan peralatan, dan personel tadbir urus institusi merupakan perkara yang memerlukan keputusan strategik dibuat di institusi pengajian tinggi di Yaman. Berkenaan dengan gaya pembuat keputusan, kajian ini mendapati bahawa kebanyakan pembuat keputusan strategik adalah mereka yang berorentasikan teknikal (analitikal dan direktif). Kajian ini juga mendapati bahawa jangkaan prestasi, jangkaan usaha, dan jangkaan nilai strategik mempunyai pengaruh yang signifikan dan positif terhadap niat bergelagat oleh pembuat keputusan strategik untuk menggunakan DSS. Walaubagaimanapun, pengaruh sosial hanya mempengaruhi niat tingkah laku apabila diuji secara berasingan sebagai satu konstruk bebas. Gaya pembuat keputusan strategik menyederhanakan hubungan antara jangkaan usaha dan niat tingkah laku sahaja. Pengalaman pentadbiran dan pencapaian professional menyederhanakan hubungan antara jangkaan prestasi dan jangkaan nilai strategik dengan niat tingkah laku sahaja. Kesimpulannya, penggunaan teknologi boleh dicadangkan sebagai satu bidang keputusan strategik yang baharu.

Kata kunci: Penggunaan teknologi, Pembuat keputusan strategik, Sistem sokongan keputusan, Permodelan persamaan berstruktur

Abstract

It is claimed that higher education institutions in Yemen do not have clear visions, missions, strategic objectives, and they apply traditional management systems with complex procedures. In addition, there has been some ignorance of technology among the Yemeni strategic decision makers because they have not had a clear view of what Information Technology applications can contribute in developing their institutions and the strategic decision-making, and styles of the strategic decision makers. IT applications can also be used in investigating the perceived acceptance of the strategic decision makers towards decision support systems (DSS) technologies. Thus, the unified theory of acceptance and use of technology (UTAUT) has been adopted. A total of 121 forms of questionnaire were collected from the strategic decision makers in Sana'a University and Science and Technology University. Descriptive, regression and structural equation modeling analyses were run to test the hypotheses. The present study found that the research policy, adoption of information technology applications, curriculum, mission, organization of colleges and university, admission policies, financial policies, facilities and equipment, and institutional governance personnel are areas that require strategic decisions in the Yemeni higher learning institutions. Regarding decision making styles, the majority are technical-oriented (analytical and directive) strategic decision makers. The findings indicate that performance expectancy and strategic value expectancy have a significant positive influence on behavioural intention of the strategic decision makers to adopt the DSS. However social influence was found to have influence on behavioural intention when it was tested alone as an independent construct. The strategic decision maker's decision making style moderates the relationship between efforts expectancy and behavioural intention only. However, administrative experience and professional achievement moderate the relationship between performance expectancy and strategic value expectancy, and behavioural intention only. As a conclusion, this study suggests that technology adoption can be a new strategic decision area.

Keywords: Technology adoption, Strategic decision making, Decision, Support systems, Structural equation modeling

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Glossary of Terms

Content Validity An aspect of validity assessing the correspondence between the individual items and the concept through ratings by expert judges, and pre-tests with multiple sub-populations or other means.

Construct Reliability An aspect of reliability measuring the internal consistency of a set of measures rather than the reliability of a single variable.

Construct Validity An aspect of validity testing how well the results obtained from the use of the measure fit the theories around which the test was designed. In other words, construct validity testified that the instrument did tap the concept as theorized.

Convergent Validity It is synonymous with criterion validity and with correlational analysis, and is one way of establishing construct validity.

Dependent Variable It is a variable of primary interest to the study, also known as the criterion variable.

Discriminant Validity It is another way of testing construct validity. A measure has discriminant validity when it has a low correlation with measures of dissimilar concepts. In other words, discriminant validity reflects the extent to which the constructs in a model are different.

Endogenous Latent Construct A latent, multi-item equivalents to a dependent variable. It is a construct that is affected by other constructs in the model.

Exogenous Latent Construct A latent, multi-item equivalent of an independent variable. It is a construct that is not affected by any other construct in the model.

Facilitating Conditions The degree to which an individual believes that an organisational and technical infrastructure exists to support use of the system.

Independent Variable A variable that influences the dependent or criterion variable and accounts for (or explains) its variance.

Information Technology Computer technology, both hardware and software, for processing and storing information, as well as communication technology including networking and telecommunications for transmitting information.

Generalisability The probability that the results of the research findings apply to other subjects, other groups, other settings and other conditions.

Longitudinal Study A research study for which data are gathered at several points in time to answer a research question.

Parsimony (Measure of Parsimony) A model high in parsimony (simplicity) is a model with relatively few parameters and relatively many degrees of freedom. On the other hand, a model with many parameters and few degrees of freedom is said to be complex or lacking in parsimony.

Methods The various means or techniques or procedures used to gather and analyse data related to some research question or hypothesis.

Methodology The strategy, plan of action, process or design lying behind the choice and use of particular methods and linking the choice and use of methods to the desired outcomes.

Moderating Variable The moderator or the moderating variable is one that has a strong contingent effect on the independent variable and dependent variable relationship. That is, the presence of a third variable (the moderating variable) modifies the original relationship between the independent and the dependent variables.

Multicollinearity When the dependent variables are highly correlated this is referred to as multicollinearity.

Perceived Ease of Use The degree to which a person believes that using a particular system would be free of effort.

Perceived Usefulness The degree to which a person believes that using a particular system would enhance his or her job performance.

Pilot Study The study conducts to detect weaknesses in design and instrumentation and to provide proxy data for selection.

Population The entire group of people that the researcher wishes to investigate. In this research it is academics within Business Schools in the Thai Public University Sector who have already had experience in using the Internet.

Pretesting A trial run with a group of participants for the purpose of detecting problems in the questionnaire instructions or design, whether the participants have any difficulty understanding the questionnaire or whether there are any ambiguous or biased questions.

Questionnaire A pre-formulated written set of questions to which participants record their answers, usually within rather closely defined alternatives.

Reliability The extent to which research findings would be the same if the research were to be repeated at a later date, or with a different sample of subjects.

Sample A sample is a subset of the population, comprising some members selected from the population.

Square Multiple Correlation It is used to measure the construct reliability. The square multiple correlation (SMC) is referred to an item reliability coefficient. It is the correlation between a single indicator variable and the construct it measures. In other words, SMC is the proportion of its variance that is accounted for by its predictors.

Social Influence The degree to which an individual perceives that other important persons believe he or she should use the system.

Structural Equation Modelling A multivariate technique combine aspects of multiple regression (examining dependence relationships) and factor analysis (representing unmeasured concepts-factors with multiple variables) to estimate a series of interrelated dependence relationships simultaneously.

Subjective Norm The social pressure exerted on the person or the decision maker to perform the behaviour. It refers to an individual's perception about what other people think of his or her behaviour in question.

Theoretical Framework A collection of theories and models from the literature which underpins a positivistic research study. It is a conceptual model of how the researcher theorises or makes logical sense of the relationships among the several factors that have been identified as important to the problem. The theoretical framework may be referred to as a conceptual framework or as the research model. These three terms are used interchangeably in this research.

Validity The extent to which the data collected truly reflects the phenomenon being studied.

List of Abbreviations

AE	Administrative experience
AGFI	Adjusted goodness-of-fit index
AMOS	Analysis of moment structures
BI	Behavioral intention
CFI	Comparative fit index
C-TAM-TPB	Combined TAM and TPB
DF	Degrees of freedom
DMS	Decision making style
DS	Decision style
DSI	Decision style inventory
DTPB	Decomposed theory of planned behavior
DW	Data warehouses
EE	Effort expectancy
EIS	Executive information systems
ES	Expert systems
FC	Facilitating conditions
GFI	Goodness- of-fit index
GDSS	Group decision support systems
IDT	Innovations diffusion theory
IS	Information system
IT	Information technology
MI	Modification indexes
ML	Maximum likelihood
MM	Motivational model
MPCU	Model of personal computer utilization
NFI	Normed fit index
OLAP	Online analytical process
PA	Professional achievement
PE	Performance expectancy
PEOU	Perceived ease of use
PU	Perceived usefulness
RMSEA	Root mean square error of approximation
SC	Strictly confirmatory
SCT	Social cognitive theory
SDM	Strategic decision maker
SEM	Structural equation modeling
SI	Social influence
SMC	Squared multiple correlations
SN	Subjective norms
SVE	Strategic value expectancy
TAM	Technology acceptance model
TAM2	Technology acceptance model 2
TLI	Tucker-Lewis coefficient Index
TPB	Theory of planned behavior
TRA	Theory of reasoned action
ULS	Unweighted least squares
UTAUT	Unified theory of acceptance and use of technology

CHAPTER ONE

INTRODUCTION

1.1 Background of the research

Decision is defined as a reasoned choice among alternatives and specific commitment toward specific actions, usually referred to as involvement in resources (Oyawale & Adegboyega, 2008). Individuals and organizations make decisions and these decisions differ in their importance and effectiveness on the life of the person or the organization. Routine activities require routine decisions that often are made in a short time and usually require the same resources and processes.

Strategic decision (SD) is defined as a highly important organizational choice that affects the future performance of a firm, involves multiple units of the organization, requires a large commitment of resources, and necessitates consideration of many complex issues (Harrison & Pelletier, 1995, Wheeler, 2003). Consequently, knowing how strategic decisions are made by studying their processes is pivotal in management science. This is because making decision is the ultimate function of managers especially for strategic decision makers who need to know how to make quality decisions to achieve the business objectives of the organization. According to Mintzberg, Raisinghani and Theoret. (1976), a decision-making process is a set of actions and dynamic factors that begins with identification of reaction to stimulation and ends with specific commitment towards the actions. Accordingly, understanding decision making process is essential to determine how the organization can incorporate the advanced information technology applications such as decision support systems (DSS) to enhance its strategic decisions efficiency and quality.

REFERENCES

Aboelmaged, M., (2000), Researching information technology adoption process in higher education institutions: a rational for applying individual - based models, Icmit 2000 0-7803-6652-2/2000/$10.00020ie0e0e

Ackoff, R. (1989). From data to wisdom. *Journal of Applied Systems Analysis* 16, 3–9.

Agrawal, K. & Swaroop, P. (2009). Effect of employer brand image on application intentions of B-School Undergraduates, *The Journal of Business Perspective, July 2009 13: 41-49*

Ahmad, N. (2002). *Business decision making, case study*, Universiti Utara Malaysia.

Ajzen, I., & Fishbein, M. (1980*). Understanding attitudes and predicting social behavior.* Englewood Cliffs, NJ: Prentice-Hall.

Ajzen, I., (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes* 50 (2), 179–211.

AlAwadhi, S. & Morris, A. (2008). The Use of the UTAUT Model in the Adoption of E-government Services in Kuwait, Proceedings of the 41st Hawaii International Conference on System Sciences – 2008, 1530-1605/08 $25.00 © 2008 IEEE

Al-Gahtani S. S, Hubona, G. S., & Wang J. (2007). Information technology (IT) in Saudi Arabia: culture and the acceptance and use of IT. *Information & Management* 44 (2007) 681–691).

Al-Qeisi K. I. (2009). Analyzing the use of UTAUT model in explaining an online behaviour: Internet banking adoption. PhD Thesis, Brunel University.

Alsaied, S.I. (2000). *Decision support systems*, Ayn Shams library Publicatins, Cairo.

Alsohybe, N. (2007). The implementation of E-government in the Republic of Yemen: an empirical evaluation of the technical and organizational readiness. PhD thesis, Capella University, February 2007.

Al-Sultan, K.S. (2006). Information effectiveness on making the administrative decisions in the ministries of the Republic of Yemen. Unpublished master thesis, Faculty of Commerce, Sana'a University, Yemen.

Alter, S. L. (1980). *Decision support systems: current practice and continuing challenge.* Reading, MA: Addison Wesley, 1980.

Amason, A. C. (1996). Distinguishing the effects of functional and dysfunctional conflict on strategic decision making: resolving a paradox for top management teams. *Academy of Management Journal*, Vol. 39, Pp. 123-48.

Amoroso, D. & Guo, Y. (2006). An analysis of the acceptance of file sharing technologies by music consumers. Proceedings of the 39th Hawaii international conference on system sciences, Hawaii.

Anderson, J. E., Schwager, P. H. & Kerns, R. L. (2006). The drivers for acceptance of tablet PCs by faculty in a college of business. *Journal of Information Systems Education*, 17 (4). 429–440.

Anderson, T. & Elloumi, F. (2008). Theory *and practice of online learning*. Athabasca University(www.Cde.Athabascau.Ca/Online_Book).

Andrews, P. H., Herschel, R. T. & Baird J. (1996). Organizational communication empowerment in a technological society Houghton Mifflin Company, Boston P87.

Armitage, C., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology*, 40, 4, 471-499.

Armstrong, J., & Overton, T., (1977). Estimating nonresponse bias in mail surveys. *Journal of Marketing Research* 14:396-402.

Arsham, H. (2004). Leadership decision making. Retrieved 10-Feb, 2011, from Http://home.ubalt.edu/ntsbarsh/opre640/partxiii.htm.

Axson, D. A. J. (2000). CEO perspectives: The real value of data. *DM Review*, 10, P. 32.

Bandura, A. (1986). Social *foundations of thought and action.* Englewood CliVs, NJ: Prentice-Hall.

Bantel, K. A. & Jackson, S. E. (1989). Top management and innovations in banking: does the composition of the top team make a difference?. *Strategic Management Journal*, 10, 107-24.

Baron, R. & Kenny, D., (1986). "The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations," *Journal of Personality and Social Psychology 51, no. 6 (1986): 1174.*

Bass, F. (1969), "A new product growth for model consumer durables", *Management Science*, Vol. 15 No. 5, pp. 215-27.

Beauclair, R. A. (1985). The computer as communication tool: The case of computer facilitated group decision making. Paper presented at the annual meeting of the Central States Smxxh Association, Indianapolis, April 4-6,1985.

Benjamin, R. & Carroll, J. (1998). *Breaking the social contract: the fiscal crisis in California higher education.* RAND: Council for Aid to Education. (CAE-01-Ip).

Bentler, P. Bonett, D. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*, 88 (1980) 588–606.

Bigne, E., Ruiz, C. & Sanz, S. (2005). The impact of internet user shopping patterns and demographics on consumer mobile buying behaviour, *Journal of Electronic Commerce Research*, Vol. 6, No. 3: 193-210, 2005.

Black D. Sun, P.; Rohrbach, L. & Sussman S. (2011). Decision-Making Style and Gender Moderation of the Self-efficacy–Condom Use Link Among Adolescents and Young Adults, *Arch Pediatr Adolesc Med. 2011;165(4):320-325.*

Bloodgood, J. & Salisbury, W. (2001). Understanding the influence of organizational change strategies on information technology and knowledge management strategies. *Decision Support Systems*, 31, 1, 2001 55–69.

Bohanec, M. (2002). *What is decision support? department of intelligent systems.* Jozef Stefan Institute Jamova 39, Si-1000 Ljubljana, Slovenia.

Bonabeau, E. (2003). Don't trust your gut. *Harvard Business Review*, 81(5). Pp. 116-123.

Bruce, R. & Scott, S. (1998). The Moderating Effect of Decision-Making Style on the Turnover Process: An Extension of Previous Research. July 29, 1998 Not Published. http://cobweb2.louisville.edu/faculty/regbruce/bruce//research/japturn.htm. Accessed in 29-10-2011 8.24pm

Buhalis, D. (2004). Eairlines: Strategic and tactical use of ICTs in the airline industry. *Information & Management*, Volume 41, Issue 7, September 2004, Pages 805-825.

Byrne, B. (2001). *Structural equation modeling with AMOS.* NJ: Lawrence Erlbaum Associates, Inc.

Carlsson, C., Carlsson, J., Hyvonen, K., Puhakainen, J. & Walden, P. (2006). Adoption of mobile devices/services-searching for answers with the utaut. Proceedings of the 39th Hawaii International Conference on System Science, HICSS06 (2006), Volume: 00, Issue: C, Publisher: Ieee, Pages: 132a-132a, ISBN: 0769525075, DOI: 10.1109/HICSS.2006.38.

Carpenter, A. (2002). The implications of strategy and social context for the relationship between top management team heterogeneity and firm performance, research notes and commentaries. *Strategic Management Journal*, Vol. 23, No. 3, Pp. 275 – 284.

Cassidy, S. (2004). Learning styles: An overview of theories, models, and measures. *Educational Psychology*, 24, 419-444.

Chaffee, E. E. (1985). Three models of strategy. *Academy of Management Review*, Vol. 10, No. 1, Pp. 89 – 98.

Chakraborty, I., Hu, P.J & Cui, D. (2008). Examining the effects of cognitive style in individuals' technology use decision making. *Decision Support Systems*, Vol. 45, No. 2. (2008), 228-241. doi:10.1016/j.dss.2007.02.003 Key: citeulike:4849028.

Chang, I. -C, Hwang, H.-G., Hung, W.-F. & Li Y.-C. (2007). Physicians' acceptance of pharmacokinetics-based clinical decision support systems, *Expert Systems with Applications 33 (2007) 296–303*

Chau, P. & Hu, P. J. (2002). Investigating healthcare professionals decisions to accept telemedicine technology: An empirical test of competing theories. *Information & Management*, 39(4). 297-311.

Chau, P. (1996). An empirical assessment of a modified technology acceptance model. *Journal Of Management Information Systems*, 1996, Vol.13, No. 2., 185-204.

Chen, J. & Lee, S. (2003). An exploratory cognitive DSS for strategic decision making. *Decision Support Systems, 36 (2003) 147– 160.*

Chen, N., Huang, H. & Shih, Y., (2002). Factors affecting usage of web-based teachers' training in elementary and high school. Proceedings of the international conference on computers in education (ICCE'02) 0-7695-1509-6/02 , IEEE.

Cheng, D., Liu, G. & Qian, C. (2008). On determinants of user acceptance of internet banking: A theoretical framework and empirical study, *IEEE Symposium on 28-29 Sept. 2008, page(s): 1 – 5,*

Chismar, W. & Wiley-Patton, S. (2003). Does the extended technology acceptance model apply to physicians. Proceedings of the 36th Hawaii international congress on system sciences (HICSS 03). *IEEE Computer Society*, Hawaii.

Chiu, C. & Wang, E. (2008). Understanding web-based learning continuance intention: the role of subjective task value. *Information & Management* 45 (2008) 194–201.

Churchill, A. (1991). *Marketing research: Methodological foundations.* Fort Worth, Tx: Dryden Press.

Churchill, G. (1979). A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research,* 16, 1, 1979, pp. 64-73.

Clark, B. (1998). Creating entrepreneurial universities: Organizational pathways to transformation. Oxford: Pergamon Press.

Cohen, M. D., March, J. G. & Olsen, J. P. (1972). A garbage can model of organizational choice. *Administrative Science Quarterly*, Vol. 17, No. 1, Pp.1 – 25. doi:10.2307/2392088.

Compeau, D., & Higgins, C. (1995b). Application of social cognitive theory to training for computer skills. *Information Systems Research*, 6(2) 118 - 143.

Covin, J. G., Slevin, D. P. & Heeley, M. B. (2001). Strategic decision making in an intuitive vs. Technocratic mode: Structural and environmental considerations. *Journal of Business Research*, Volume 52, Issue 1 , April 2001, Pages 51-67.

Czajaa, S. J., Hammondb, K., Blascovichc, J. J., & Sweded, H. (1989). Age related differences in learning to use a text-editing system. *Behavior and Information Technology*, 8(4). 309-319.

Davis F. D., Bagozzi, R.P. & Warshaw, P.R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35, 1989, Pp. 982-1003.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13, 1989, 319-339.

Davis, F. D. (1993). User acceptance of information technology: System characteristics, user perceptions and behavioral impacts. *International Journal of Man-Machine Studies*, 38, 1993, 475-487.

Davis, F.D., Bagozzi, R.P. & Warshaw, P.R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology*, 22(14). 1111-1132.

Davis, G.B. (1974). *Management information system: Conceptual foundations, structure, and development.* New York: McGraw-hill, 1974.

Dean, J. W. Jr. & Sharfman, M. P. (1996). Does decision process matter? A study of strategic decision making effectiveness. *Academy of Management Journal*, Vol. 39, No. 2, Pp. 368 – 396.

Dean, J., & Sharfman, M. (1993). Procedural rationality in the strategic decision making process. *Journal of Management Studies*, Jul93, Vol. 30 Issue 4, p587-610, 24p, 3 Charts.

Delavaril, N., Beikzadeh, M.R. & Phon-Amnuaisuk, S. (2005). Application of enhanced analysis model for data mining processes in higher educational system, information technology based higher education and training, 2005. *ITHET 2005. 6th International Conference on Digital Object Identifier: 10.1109/ITHET.2005.1560303*. *IEEE.*,2005.

Diamantopoulos, A., & Siguaw, J. (2000). *Introducing LISREL.* London: Sage Publications.

Dickerson, M.; James, W. Gentry, W. (1983).Characteristics of Adopters and Non-Adopters of Home Computers, *The Journal of Consumer Research*, Vol. 10, No. 2. (Sep., 1983), pp. 225-235.

Diaz, M. & Loraas T. (2010). Learning new uses of technology while on an audit engagement: Contextualizing general models to advance pragmatic understanding. *International Journal of Accounting Information Systems*, 11 (2010) 61–77.

Dillon, A. & Morris, M. (1996). User acceptance of information technology: Theories and models. *Journal of American Society for Information Science*, vol. 31, no., pp. 3-32, 1996.

Donnelly, R & Lightfoot, R. (1996). The impact of information and communication technologies on the strategic decision making process. *Proceedings of the 1996 IEEE International Engineering Management Conference*. Vancouver, BC, Canada 1996. p. 316-322.

Douglas, D. (2005). Exploring agent-based simulation of causal maps: Toward a strategic decision support tool. PhD, Kent State University, College Of Business Administration / department of management and information systems, 2005.

Dressel, P. (1981). Administrative *leadership: effective and responsive decision making in higher education.* San Francisco. Jossey- Bass.

Dreyfus, H. L. & Dreyfus, S. E. (1986). *Mind over machine: The power of human intuition and expertise in the era of the computer*. new York: the free press.

Dreyfus, H.L. & Dreyfus, S.E. (2005). Expertise in real world contexts. *Organization Studies 26 (5), 779-792.*

Driver, M. J. (1979). *Individual decision making and creativity.* S. Kerr (Ed.), Organizational behavior. Columbus, OH: Grid Publishing.

Driver, M.J. Svensson, K., Amato, R.P. & Pate, L.E. (1996). A human-information-processing approach to strategic change. *International Studies of Management & Organization*, 26 (1). 41-45.

Driver, M.J., Brousseau, K.R., & Hunsaker, P.L. (1993). *The dynamic decision maker*. San Francisco: Jossey-Bass Publishers 1993.

Duliba, K. A., Kauffman, R. J. & Lucas, H.C. (2001). Appropriating value from computerized reservation system ownership in the airline industry. *Organization Science*, 12:6, 702-728.

Dutton, J., & Duncan, R. (1987). The creation of momentum for change through the process of strategic issue diagnosis. *Strategic Management Journal*, 8(3). 279-295.

Eagly, A., & Chaiken, S. (1993). *Psychology of attitudes.* NY: Harcourt, Brace Jovanovich.

Eakuru, N. (2010). The direct and indirect effect of antecedent variables on customer loyalty toward commercial bank in Southern Thailand. Unpublished PhD, Universiti Utara Malaysia, 2010.

Eckhardt, A., Laumer, S. & Weitzel, T. (2009). Who influences whom? Analyzing workplace referents' social influence on it adoption and non-adoption. Journal of Information Technology, vol. 24, no. 1, pp. 11-24.

Egan, D. E. & L. M. Gomez (1985). Assaying, isolating and accommodating individual differences in learning a complex skill," individual differences in cognition. Ed. R. Dillon, Academic Press, New York, 1985.

Eisenhardt, K. M. & Zbaracki, M. J. (1992). Strategic decision making. *Strategic Management Journal*, Vol. 13, Winter Special Issue, Pp. 17 – 37.

Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, Vol. 14, No.4, Pp. 532 – 550.

Elbanna, S. & Child J. (2007). The influence of decision, environmental and firm characteristics on the rationality of strategic decision-making. *Journal of Management Studies*, 44:4 June 2007.

Eysenck, H.J. (1991). Dimensions of personality: 16, 5, or 3 criteria for a taxonomic paradigm. *Personality and Individual Differences*, 12: 773-790.

Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*, Reading, MA: Addison-Wesley.

Fitterer, R., Mettler, T., Rohner, P. & Winter, R. (2010). A taxonomy for multi-perspective ex ante evaluation of the value of complementary health information systems: *Applying the unified theory of acceptance and use of technology. Proceedings Of the 43rd Hawaii International Conference On System Sciences – 2010, IEEE).*

Foon, Y.& Fah, B. (2011). Internet Banking Adoption in Kuala Lumpur: An Application of UTAUT Model, *International Journal of Business and Management Vol. 6, No. 4; April 2011*

Fornell, C. & Larcker, D. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 24(4), 343-373.

Fredrickson, J. W. & Mitchell, T. (1984). Strategic decision processes: Comprehensiveness and performance in an industry with an unstable environment. *Academy of Management Journal*, Vol. 27, No. 2, Pp. 399 – 423.

Fredrickson, J. W. (1985). Effects of decision motive and organizational performance level on strategic decision processes. *Academy of Management Journal*, Vol. 28, No. 4, Pp. 821 – 843.

Fredrickson, J., & Iaquinto, A. (1989). Inertia and creeping rationality in strategic decision processes. *Academy of Management Journal*, 32: 516-542.

Gardner, C. & Amoroso, D. (2004). Development of an instrument to measure the acceptance of internet technology by consumer. Proceedings of the 37th Hawaii international conference on system sciences – 2004,IEEE.

Gerbing, D. & Anderson, J. (1988). An updated paradigm for scale development incorporating unidimensionality and its assessment. *Journal of Marketing Research*, 25, 1, 1988, pp. 186-192.

Gerson, M. Chien, I.S. & Raval, V. (1992). Computer assisted decision support systems: Their use in strategic decision making. Eppley College of Business Administration, Creighton University, Omaha, Ne 68178.

Gonzales, C. & Kasper, G.M. (1999). *Animation in user interfaces designed for decision support systems. The effects of image abstraction, transition, and interactivity on decision quality*. Kendall, K.E. (Eds). Emerging information technologies: improving decisions, cooperation, and infrastructure, Sage Publications, Thousand Oaks, Ca, Pp.45-74.

Goode, S. & Stevens, K., (2000). An analysis of the business characteristics of adopters and non-adopters of World Wide Web technology, *Information Technology and Management; 2000; 1*, pp. 129-154.

Gornitzka, A. & Maasen, P. (2000). National policies concerning the economic role of higher education. *Higher Education Policy*, ISSN 0952-8733. 13(3). s 225- 230.

Gorry, A. & Scott-Morton, M.S. (1971). A framework for information systems. *Sloan Management Review*, 13, 1, Fall 1971, 56-79.

Grandon, E. & Pearson, M. (2004). Electronic commerce adoption: An empirical study of small and medium US businesses. *Information & Management*, 42 (2004) 197–216.

Gupta, B., Dasgupta, S. & Gupta, A. (2008). Adoption of ICT in a government organization in a developing country: An empirical study. *Journal of Strategic Information Systems*, 17 (2008) 140–154).

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998*). Multivariate data analysis.* 5th ed., Prentice-Hall, Upper Saddle River, New Jersey.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (2006). *Multivariate data analysis*, 6th ed. Pearson Prentice Hall. Upper Saddle River, New Jersey.

Hair, J. F., Black, W. C., Babin, B.J. & Anderson, R. E. (2010*). Multivariate data analysis*, 7th ed. Pearson Prentice Hall. Upper Saddle River, New Jersey.

Hair, J.F., Money, A.H., Samouel, P. & Page, M. (2007). *Research methods for business.* John Wiley & Sons, Ltd, The Atrium, Southern Gate, Chichester, West Sussex PO19 8SQ, England.

Harrison, E. (1987). *The managerial adecision making process*. Hounghton Mifflin Company, Third Edition.

Harrison, E. (1996). A process perspective on strategic decision making. *Management Decision*, Volume 34 Number 1 1996 Pp. 46-53.

Harrison, E.F. & Pelletier, M.A. (1995). A paradigm for strategic decision success. *Management Decision, Vol. 33 Iss: 7, pp.53 – 59.*

Hart, M. & Porter, G. (2004). The impact of cognitive and other factors on the perceived usefulness of OLAP. *Journal of Computer Information Systems*, Oct (1) 47-56.

Hawthorne, I. (1996). Increasing understanding of decision making in higher education: the case of Taiwan. *Quality in Higher Education*, Vol. 2, No.1, 1996.

Hedelin, L. & Allwood, C. (2002). IT and strategic decision making. *Industrial Management & Data Systems*, Volume 102 Number 3 2002 Pp. 125-139.

Hendrickson, A. R., Massey, P. D. & Cronan, T. P. (1993). On the test-retest reliability of perceived usefulness and perceived ease of use scales. *MIS Quarterly*, Vol.17, Iss. 2; Pg. 227-230.

Henkel, M. (1997). Academic values and the university as corporate enterprise. Higher Education Quarterly. 38, 5-31.

Hickson, D., Butler, R., Cray, D., Mallory, G.R, & Wilson, D. (1986). Top decisions: strategic decision-making in organizations. San Francisco: Jossey-Bass.

Hill, C., Loch, K., Straub, D. W. & El-Sheshai, K. (1998). A qualitative assessment of arab culture and information technology transfer. *Journal of Global Information Management*, 6(3) 29-38.

Hinton, (2006). Problem solving and decision making, University of Nevada, fact sheet93-95, July, 15, 2006. www.unce.unr.edu/publications/fs93/fs9395.pdf.

El-Sherif, H & El-Sawy, O. (1988). Issue-based decision support systems for the Egyptian cabin, *MIS Quarterly*; Dec 1988; 12, 4; ABE/Inform Global.

Hitt, M. A. & Tyler, B. B. (1991). Strategic decision models: Integrating different perspectives. *Strategic Management Journal*, Vol. 12, No. 5, Pp. 327 – 351.

Hsu, C. & Lu, H. (2004). Why do people play on-line games? An extended TAM with social influences and flow experience. *Information & Management*, 41, 835–868.

Hsu, C., & Lu, H. (2007). Consumer behavior in online game community: A motivational factor perspective. *Computers in Human Behavior*, 23(3). 1642–1659.

Hu, P. J., Chau, P. Y. K., Liu Sheng, O. R. & Tam, K. Y. (1999). Examining the technology acceptance model using physician acceptance of telemedicine technology. *Journal of Management Information Systems*, 16(2). 91,112.

Huang, S. & Wang, X. (2009). Influence of Organizational System to End-Users' Acceptance of ERP System in Chinese Enterprises, *Ninth International Conference on Hybrid Intelligent Systems*, 978-0-7695-3745-0/09 $25.00 © 2009 IEEE DOI 10.1109/HIS.2009.323

Huber, G. (1990). A theory of the effects of advanced information technologies on organizational design, intelligence, and decision making. *Academy of Management Review*, 15: 47-71.

Hubona, & Kennick, (1996). The influence of external variables on information technology usage behavior. *Proceedings of the 29th hawaii international conference on system sciences (HICSS) Volume 4: Organizational Systems and Technology, IEEE.*

Hubona, G. & Jones, A. (2003). Modeling the user acceptance of e-mail, *proceedings of the 36th Hawaii international conference on system sciences (HICSS'03) 0-7695-1874-5/03 , IEEE.*

Hui-Yi, H.; Luh-Wang, W. & Hsiu-Chuan, T. (2010). Consumers' behavioral intentions of using cross-media book for E-learning, *3rd International Conference on Information Sciences and Interaction Sciences (ICIS), 2010 , 10.1109/ICICIS.2010.5534714 , Page(s): 77 - 82*

Igbaria, M. & S. Parasuraman. (1989). A path analytic study of individual characteristics, computer anxiety, and attitudes towards microcomputers. *Journal of Management,* 15, 3, 1989, 373-388.

Igbaria, M., Zinatelli, N., Cragg, P. & Cavaye, A. (1997). Personal computing acceptance factors in small firms: a structural equation model." *MIS Quarterly*, 21, 1997, 279- 305.

Im, I., Hong, S. , & Kang, M. S., (2011). An international comparison of technology adoption Testing the UTAUT model, *Information & Management 48 (2011) 1–8*

Jacoby, J. (2006). *Relationship between principals' decision making styles and technology acceptance & use,* PhD dissertation, University of Pittsburgh, December 11, 2006.

Jennings, W. & Wattam, S. (1998). *Decision making: An integrated approach.* second edition, financial times Pitman Publishing, London Pp 2,104.

Jeruwachirathanakul, B., & Fink, D. (2005). Internet banking adoption strategies for a developing country: The case of Thailand. *Internet Research,* 15 (3) 295-311.

Jiang, J., Hsu, M., Klein, G., & Lin, B. (2000). E-Commerce user behaviour model: an empirical study. *Human Systems Management, 19(4), 265–276.*

Jong, D. (2009). The Acceptance and Use of the Learning Management System, *Fourth International Conference on Innovative , Computing, Information and Control,* 2009 IEEE

Jong, D. & Wang T. (2009). Student acceptance of web-based learning system. *Proceedings of the 2009 international symposium on web information systems and applications (WISA'09). Nanchang, P. R. China*, May 22-24, 2009, Pp. 533-536.

Jung, C. G., (1959). *Psychological types.* (Rev. ed.) New York: Pantheon Books, 1959.

Kanaan, N. (1992). *Administrative decision making.* Faculty of Rights, Jordan.

Karahanna, E.& Straub, D. (1999). The psychological origins of perceived usefulness and ease-of-use. *Information & Management,* 35, 1999, 237-250.

Kepner, C. & Tregoe, B. (1965). *The rational manager: a systematic approach to problem solving and decision making.* Mcgraw Hill, New York, Ny, 1965.

Khandwalla, P. N. (1977). *The design of organizations.* New York: Harcourt Brace Jovanovich.

Kim, S. (2008). Moderating effects of job relevance and experience on mobile wireless technology acceptance: Adoption of a smartphone by individuals. *Information & Management,* 45 (2008) 387–393.

Kimberly, J.R., Evanisko, M.J. (1981). Organizational innovation: The influence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovation. *Academy of Management Journal*, Vol. 24 Pp.689-713.

Klopping, I. & Mckinney, E. (2004). Extending the technology acceptance model and the task -technology fit model to consumer E-commerce, information technology. *Learning, and Performance Journal*, Vol. 22, No. 1, Spring 2004.

Klopping, I. & McKinney, E. (2006). Practice makes a difference: Experience and E-commerce. *Information Technology Learning and Performance Journal*, Vol. 24, No. 1.

Knezevich, S. (1984). *Administration of public education, A sourcebook for the leadership and management of educational institutions*. Fourth Edition, Harperandrow, Publisher, Inc.

Knutsen, L. A. (2005). M-service expectancies and attitudes: Linkages and effects of first impressions. *IEEE Proceedings of the 38th Hawaii international conference on system sciences.*

Kolodinsky, J., Hogarth, J.M. & Hilgert M.A. (2004). The adoption of electronic banking by US consumers. *The International Journal of Bank Marketing*, 22 (4) 238- 259.

Koo, D., (2009). The moderating role of locus of control on the links between experiential motives and intention to play online games. *Computers in Human Behavior* 25 (2009) 466–474.

Laitenberger, O. & Dreyer, H. (1998). Evaluating the usefulness and the ease of use of a web-based inspection data collection tool. *IEEE.* 20-21 Nov. 1998 Page(S).122 – 132.

Laudon, K. C., & Laudon, J. P. (2002). *Management information systems: Managing the digital firm* (7th ed.). Upper Saddle River, NJ: Prentice-Hall Inc.

Lechner, C. & Müller-Stewens, G. (2000). Strategy process research: what do we know, what should we know?, Dahiya, S. B. (editor). *The current state of business disciplines, Vol. 4, Management*, Pp. 1863 – 1893.

Lee, G. & Lin, H. (2005). Customer perception of E-service quality in online shopping. *International Journal of Retail and Distribution Management*, 33 (2) 161-176.

Lee, T. & Jun J. (2005). Contextual perceived usefulness? Toward an understanding of mobile commerce acceptance. *Proceedings of the international conference on mobile business (ICMB'05) 0-7695-2367-6/05 , IEEE.*

Lee, Y., Kozar, K.A. & Larsen, R.T (2003). The technology acceptance model: Past, present, and future. *Communications of the Association for Information Systems* (Volume 12, Article 50) 752-780.

Legris, P., Ingham, J. & Collerette, P. (2003). Why do people use information technology? A critical review of the technology acceptance model. *Information & Management*¸ 40, 3, 191-204.

Leonard, N.H., Scholl, R.W. & Kowalski, K.B. (1999). Information processing style and decision making. *Journal Of Organizational Behavior*, May 1999.Vol.20, ISS. 3; Pg. 407, 14 Pgs.

Lerner, A. (1999). *A strategic planning primer for higher education. College of business administration and economics,* California State University, Northridge. July 1999.

Li, J. & Kishore, R. (2006). How robust is the UTAUT instrument? A multi group invariance analysis in the context of acceptance and use of online community web log systems. *Proceedings of the 2006 ACM SIGMIS CPR conference on computer personnel research. Claremont,* California USA, session 6.1pp 183 -189.

Li, Y., Tan, C-H., Xu, H. & Teo, H., (2011). Open Source Software Adoption: Motivations of Adopters and Amotivations of Non-adopters, *The DATA*

BASE for Advances in Information Systems 76 Volume 42, Number 2, May 2011

Liao, E. & Landry R, (2000). An empirical study on organizational acceptance of new information systems in a commercial bank. *Proceedings of the 33rd Hawaii international conference on system sciences – 2000*.

Liao, S. (2003). *Knowledge management technologies and applications—literature review from 1995 to 2002.* Department of management sciences & decision making, Tamkang University, No. 151, Yingjuan Rd., Danshuei Jen, Taipei, Taiwan 251 R.O.C.

Limayem, M., Hirt, S.G. & Chin, W. (2001). Intention does not always matter: The contingent role of habit on IT usage behavior. *The 9th european conference on information Systems Bled, Slovenia, June 27-29, 2001).*

Lin, H. & Wang Y. (2005). Predicting consumer intention to use mobile commerce in Taiwan. *Proceedings of the international conference on mobile business (ICMB'05) 0-7695-2367-6/05*.

Lin, L. & Shih, H. (2011).The Influence of Lifestyles and Money Attitudes on Purchase Decisions: The Moderating Effects of Personal Values. International *Conference on Business And Information. July 4-6, 2011, Bangkok, Thailand.* Recipient of BAI 2011 Best Paper Award.

Liu, Y., Li, H. & Carlsson, C. (2010). Factors driving the adoption of m-learning: An empirical study, *Computers & Education 55 (2010) 1211–1219.*

Loch, K.D., Straub, D.W. & Kamel, S. (2003). Diffusing the internet in the arab world: The role of social norms and technological culturation. *IEEE transactions on engineering management 50, 2003, Pp. 45–63, ISSN: 0018-9391*.

Lohman, F. Sol, H.G. & Vreede, G.D. (2003). The illusion of effective management information: a critical perspective. *Proceedings of the 36th Hawaii international conference on system sciences (HICSS'03) 0-7695-1874-5/03 $17.00 © 2003 IEEE.*

Loo, W.H., Yeow, P. H. & Chong, S.C. (2009). User acceptance of Malaysian government multipurpose smartcard applications. *Government Information Quarterly*, 26 (2009) 358–367.

Lu, C. Lai, K. & Cheng, T.C.E. (2007). Application of structural equation modeling to evaluate the intention of shippers to use internet services in liner shipping. *European Journal of Operational Research*, 180 (2007) 845–867.

Lu, J., Yu, C. S., & Yao, J. E. (2003). Technology acceptance model for wireless Internet. *Internet Research, 13(3), 206–222.*

Luarn, P. and Lin, H. (2005), "Toward an understanding of the behavioural intention to use mobile banking", *Computers in Human Behaviour,* Vol. 21 No. 6, pp. 873-91.

MacCallum, R. C., & Austin, J. T. (2000). Application of structural equation modelling in psychological research. *Annual Review of Psychology, 51, 201- 226.*

MacVaugh, J.& Schiavone, F. (2010). Limits to the diffusion of innovation A literature review and integrative model, *European Journal of Innovation Management,* Vol. 13 No. 2, 2010, pp. 197-221

Marques, B.P.; Villate, J.E. & Carvalho, C.V. (2011). Applying the UTAUT model in Engineering Higher Education: Teacher's technology adoption. *6th Iberian Conference on Information Systems and Technologies (CISTI), IEEE , page1 – 6, 978-1-4577-1487-02011 , Page(s): 1 - 6*

March, J.M. (1978). Bounded rationality, ambiguity, and the engineering of choice. *The Bell Journal of Economics*, Vol. 9, No. 2 (Autumn, 1978), pp. 587-608

Marchewka, J.T., Liu, C. & Kostiwa, K. (2007). An application of the UTAUT model for understanding student perceptions using course management software. *Communications of the IIMA*, 2007 Volume 7 Issue).

Martinsons, M. & Davison, R. (2007). Strategic decision making and support systems: Comparing american, Japanese and Chinese management. *Decision Support Systems*, Volume 43, Issue 1 , February 2007, Pages 284-300.

Mason, R. O., & Mitroff, I. I. (1973). A program of research on management information systems. *Management Science,* 19, 475-487.

Mech, T. (1993). The managerial decision styles of academic library director. *College & Research Libraries*, 54(5). 375- 386.

Medsker, G. J., Williams, L. J., & Holahan, P. J. (1994). A review of current practices for evaluating causal models in organizational behavior and human resources management research. *Journal of Management*, 20(2), 439–464.

Melville, N., Kraemer, K.L., & Gurbaxani, V. (2004). Review: Information technology and organizational performance: An integrative model of IT Business Value, *MIS Quarterly,* June, 2004, 283-322.

Miller, S., Wilson, D. & Hickson, D. (2004). Beyond planning strategies for successfully implementing strategic decisions. *Long Range Planning* 37 (2004) 201–218.

Ministry of Finance, (2005). Online book, http://www.cso-yemen.org/content.php?lng=english&id=495. Retrived at 8:25 pm 20-4-2007.

Ministry of higher education. (2004). Education act no. 45 of 1992, the law of the Yemeni universities number 18 for the year in 1995, and the law of private universities No. 13 of 2004.

Ministry of Higher Education and Scientific Research, (2006). *National strategy for the development of higher education in Yemen.* Ministry of Higher Education & Scientific Research publicatins, yemen2006.

Mintzberg, H. (1973). *The nature of managerial work*. New York: Harper & Row.

Mintzberg, H., Raisinghani, D. & Theoret, A. (1976). The structure of the 'unstructured' decision processes. *Administrative Science Quarterly*, Vol. 21, No. 2, Pp. 246 – 275.

Mohamed, A. & Hamdan, A. (2001). Executive support system for public higher education institutions in Malaysia" (2001). PACIS 2001 *Proceedings. Paper 82. http://aisel.aisnet.org/pacis2001/82.*

Money, W., & Turner, A. (2004). Application of the technology acceptance model to a knowledge management system. *Proceeding of the 37th Hawaii international conference on system sciences. Big Island, Hawaii: IEEE.*

Morris, M. G., & Dillon, A. (1997). How user perceptions influence software use. IEEE. Software, volume: 14 , issue: 4 Pg.58-65.

Morris, M., & Venkatesh, V. (2000). Age differences in technology adoption decisions: Implications for a changing work force. *Personnel psychology*, 53 (2) 375- 403.

Mukhopadhyay, T., & Kekre, S. (2002). Strategic and operational benefits of electronic integration in B2B procurement processes. *Management Science*, volume 48 issue 10, October 2002.

Ndubisi, N. & Kahraman, C. (2005). Malaysian women entrepreneurs: understanding the ICT usage behaviors and drivers. *Journal of Enterprise Information Management*, 2005 volume: 18 issue: 6 Page: 721 – 739.

Nunnally, J. C. & Bernstein, I. H. (1994). *Psychometric theory (3rd ed.).* McGraw-Hill, New York, 1994.

Nutt, P. C. (1990). Strategic decision made by top executive and middle managers with data and process dominant styles. *Journal of Management Studies*, 27(2). 172- 194.

Nutt, P. C. (2000). Context, tactics, and the examination of alternatives during strategic decision making. *European Journal of Operational Research*, Vol. 124, No.1, Pp. 159-186.

Nutt, P.C. (1984). Types of organizational decision processes. *Administrative Science Quarterly*, 29,3, 414-50.

O'Reilly, C. A., III (1982). Variations in decision makers' use of information sources: the impact of quality and accessibility. *Academy Of Management Journal*, 1982, Vol. 25, No.4, 756•771.

O'Reilly, C. A., III (1983). The use of information in organization decision-making: a model and some propositions. *Research in Organization Behavior* 5: 103-139.

ORJI,. R., (2010). Impact of gender and nationality on acceptance of a digital library: an empirical validation of nationality based UTAUT using SEM. *Journal of Emerging Trends in Computing and Information Sciences,* Vol. 1, No. 2, Oct 2010

Oshlyansky, L. Cairns, P. & Thimbleby, H. (2007). Validating the unified theory of acceptance and use of technology (UTAUT) tool cross-culturally. http://www-users.cs.york.ac.uk/~pcairns/papers/Oshlyansky_HCI07.pdf. accessed in 18-3-2011, 4:36 am.

Oyawale, F. & Adegboyega, O. (2008). Manpower planning using decision analysis: Case of crown company. *The Pacific Journal of Science and Technology*, volume 9. number 2. November 2008 (Fall).

Ozdemir, S., Trott, P. and Hoecht, A. (2008).Segmenting internet banking adopter and non-adopters in the Turkish retail banking sector, *International Journal of Bank Marketing* Vol. 26 No. 4, 2008).

Pai, J. C. & Tu, F.M. (2011). The acceptance and use of customer relationship management (CRM) systems: An empirical study of distribution service industry in Taiwan, *Expert Systems with Applications 38 (2011) 579–584*

Park, D. (1996). Gender role, decision style and leadership style. *Women in Management Review*, volume 11 • number 8 • 1996 • Pp. 13–17.

Park, J., Yang, S. & Lehto, X. (2007). Adoption of mobile technologies for chinese consumers. *Journal of Electronic Commerce Research*, Vol 8, No 3, 2007.

Parke, J. (1985). *Comparisons of decision-making styles of florirya community and junior college department chairpersons and division directors*. PhD dissertation, Faculty of the Graduate School, University of North Carolina at Greensboro.

Pennino, C. M. (2001). *The relationship between managerial decision style, principled reasoning, and selected variables in business organizations*. Unpublished doctoral dissertation, New York University, New York, 2001).

Perelman, A. (2000). *Women entrepreneurs- a comparative analysis of decision style in high-tech.* PhD dissertation, California School of professional psychology, Los Angeles.

Pevzner, M. (2006). *A case study of strategic planning at Kent State* University, Novgorod State University, Russia. October 10 –November 30, 2006.

Pfeffer, J. & Salancik, G. R. (1974). Organizational decision making as a political process: The case of a university budget. *Administrative Science Quarterly*: Vol. 19, No. 2, Pp. 135 – 151.

Pijpers, G. & Montfort, K. (2005). An investigation of factors that influence senior executives to accept innovations, information technology. *International Journal of Management*, Vol. 22 No. 4 December 2005.

Polancic, G., Hericko, M. & Rozman, I. (2010). An empirical examination of application frameworks success based on technology acceptance model. *Journal of Systems and Software* 83, 4, Pp 574–584.

Pomero, J. & Adam F. (2004). Practical decision making from the legacy of herbert simon to decision support systems, decision support in an uncertain and complex world. *The IFICP TC8/WG 8.3 International Conference 2004.*

Poon, P & Wagnerc, (2001). Critical success factors revisited: Success and failure cases of information systems for senior executives. *Decision Support Systems*, volume 30, issue 4 , March 2001, pages 393-418.

Power, J. (2000). Supporting business decision making. Www.Dssresources.Com. (http://dssresources.com/tour). Accessed 18-3-2011, 6:00 am.

Power, J. D. (2003). *Defining decision support constructs, DSS in the uncertainty of the internet age,* T. Bui, H. Sroka, S. Stanek Et J. Goluchowski (Eds.). Karol Adamiecki University of Economics Press, Katowice, Poland, 51-61.

Pratt, G. (1990). *Levels of strategy in public higher education.* University of Technology, Sydney, Australia.

Rahman, A., Jamaludin, A. & Mahmud ,. Z. (2011). Intention to Use Digital Library based on Modified UTAUT model: perspectives of Malaysian postgraduate students. *World Academy of Science, Engineering and Technology 75 2011*

Raisinghani, M. S. (2004). *Business intelligence in the digital economy: opportunities, limitations, and risks.* Hershey PA: idea group publishing.

Rajagopalan, N., Rasheed, A. & Datta, D.K. (1993). Strategic decision processes: critical review and future directions. *Journal of Management*, Vol. 19, No. 2, Pp. 349 – 384.

Rao, S. & Troshani, I. (2007). A conceptual framework and propositions for the acceptance of mobile services. *Journal of Theoretical and Applied Electronic Commerce Research,* Vol 2, Issue 2, August 2007 / 61 – 73.

Razik, T. & Swanson, A. (2001). *Fundamental concepts of educational leadership.* 2nd Ed. State University Of New York-Buffalo, Merrill Prentice Hall, Upper Saddle River, New Jersey Columbus, Ohio.

Roberto, M. (2000). Strategic decision-making processes: moving beyond painful trade-offs. *Academy of Management Proceedings & Membership Directory*, 2000, pG1-G6, 6p 3, 1-6.

Rockart, J. & Delong, D. W. (1988). *Executive support systems.* Dow Jones-Lrwin, Homewood, Il, 1988.

Rogers, E. (1995*). Innovation in organizations: the diffusion of innovations (4th ed.)*, NY: Free Press, 1995.

Rogers, E.M. (1962). *Diffusion of Innovations.* Glencoe: Free Press. ISBN 0612628434.

Rogers, E.M. (2003), *Diffusion of Innovationsm*, 5th ed., Free Press, York, NY

Rose, G. & Straub, D. (1998). Predicting general IT use: Applying TAM to the arabic world. *Journal of Global Information Management*, 6, No. 3 pp. 39-45.

Rosen, P. (2005). *The Effect Of Personal Innovativeness On Technology Acceptance And Use*, Oklahoma State University, Doctor Of Philosophy, July, 2005

Rowe, A. & Boulgarides, J. (1983). Decision styles: a perspective. *Leadership and Organization Development Journal*, 4 (4) 3–9.

Rowe, A. & Boulgarides, J. (1994). *Managerial decision making*, Prentice-Hall, Englewood Cliffs, Nj, 1994.

Rowe, A. J. & Mason, R. O., (1985). Managing with style: A guide to understanding, assessing, and improving decision making. Jossey-Bass, San Francisco, CA.

Rowe, A. J., & Mason, R. O., (1987). Managing with style: A guide to understanding, assessing, and improving decision making. Jossey-Bass, San Francisco, California.

Rowe, A., & Boulgarides, J., (1992). Managerial decision making: A guide to successful business decisions. NY: McMillan.

Rumizen, M., (1998). How Buckman Laboratories' shared knowledge sparked a chain reaction. *Journal of Quality & Participation*, Vol. 21 pp.34-8.

Sabherwal, & Chan, Y., (2001). Alignment between business and is strategies: A study of prospectors, analyzers, and defenders. *Information Systems Research*, 12(1). 11-33.

Sabherwal, & Grover, (1989). Computer support for strategic decision-making processes: review and analysis. *Decision Sciences*; Winter 1989; 20, 1; ABE/Inform Global Pg. 54.

Sachidanandam, S. (2006). *Why physicians do or do not use computerized physician order entry systems: Applying the technology acceptance model.* PhD dissertation, Graduate College of Bowling, Green State University, August 2006.

Sana'a University. (2002). Sana'a University's statistical annual reports 2001/2002 Pg. 22.

Sana'a University. (2004). Sana'a University's Statistical Annual Reports 2003/2004 Pg. 114.

Sanchez-Franco, M. Ramosa A.F. & Veliciaa, F.A. (2009). The moderating effect of gender on relationship quality and loyalty toward Internet service providers. *Information & Management* 46 (2009) 196–202.

Sarawanawong, J., Tuamsuk, K., Vongpraset, C., & Khiewyoo, J. (2009). Development of a strategic knowledge management model for Thai Universities. *Asia-Pacific Conference on Library & Information Education & Practice, 2009.*

Sarkar, P. (2003). Applying the balanced scorecard in the IT organization. *Information Management Magazine, December 2003. (*http://www.information-management.com/issues/20031201/7762-1.html). Accesed in 3-9-2010, 3:46 am.

Sarosa, S. & Zowghi, D. (2003). Strategy for adopting information technology for SMEs: experience in adopting email within an indonesian furniture company. *Electronic Journal of Information Systems Evaluation*, volume 6 issue 2 (2003) 165-176.

Sauers, D. A., Kennedy, J. C., & Holland, S. C. (2005). The moderating effects of leadership style on subordinates' perceptions of decision effectiveness: A partial test of the Vroom-Yetton model. *Journal of Organizational Culture, Communications and Conflict, 9(2), 97–112*

Sauter, V. & Free, D. (2005). Competitive intelligence systems: Qualitative DSS for strategic decision making. *Database for Advances, Information Systems*; Spring 2005; 36, 2; ABE/Inform Global Pg. 43.

Sauter, V. (1997). *Decision support systems: An applied managerial approach*. NY: John Wiley & sons, Inc.,1997.

Schwenk, C. R. (1995). strategic decision-making. *Journal of Management*, Vol. 21, No. 3, Pp. 471 – 493.

Scott, S., & Bruce, R. (1995). Decision-making style: The development and assessment of a new measure. *Educational and Psychological Measurement*, 55(5). 818-831.

Sekaran, U. (2003*). Research methods for business: A skill-building approach*. Wiley, New York, NY.

Seyal, A.H., Rahman, M.N.A. & Rahim, M.M. (2002). Determinants of academic use of the internet: A structural equation model. *Behaviour and Information Technology*, 21(1), 71–86.

Simon, H. (1992). *Lessons from germany's midsize giants*. *Harvard Business Review*, LXX, 2, 115–23.

Simon, H. A. (1997). *Administrative behavior (4th expanded edition; first edition 1947).* The Free Press, N.Y.

Simon, H.A. (1977). *The new science of management decision (3rd revised edition; first edition 1960).* Prentice-Hall, Englewood Cliffs, Nj.

Sipponen, J. (2006). *Strategy communication practices: A case study in a public educational organization.* Master Thesis, Helsinki University of Technology. Online accesed : http://www.strada.tkk.fi/documents/sipponen2006.pdf 17-12-2009 7:11am.

Spangler, W. (1991). The role of artificial intelligence in understanding the strategic decision-making process. *IEEE. Transactions on Knowledge and Data Engineering*, Vol. 3, No. 2, June 1991 149.

Staw, B. (1981). The escalation of commitment to a course of action. *Academy Of Management Review*, Vol. 6, No. 4, Pp. 577 – 587.

Straub, D., Loch, K., & Hill, C. (2001). Transfer of information technology to the arab world: A test of cultural influence modeling. *Journal Of Global Information Management*, 9, 2001, Pp. 6–28.

Subramani, M. (2004). How do suppliers benefit from information technology use in supply chain relationships?. *MIS Quarterly*, Vol. 28 No. 1, Pp. 45-73/March 2004.

Subramanian, G. & Nosek, J. (2001). An empirical study of the measurement and instrument validation of perceived strategy value of information systems. *Journal Of Computer Information Systems*, Spring 2001. Vol. 41, ISS. 3; P. 64 -69.

Succi, M. & Walter, Z. (1999). Theory of user acceptance of information technologies: An examination of health care professionals. *proceedings of the 32nd Hawaii international conference on system sciences, 1999.*

Sugumaran, V. & Bose, R. (1999). *Data analysis and mining environment: a distributed intelligent agent technology application.* Le Moyne College, Syracuse, New York, NY, USA.

Sun, H., & Zhang, P. (2006). The role of moderating factors in user technology acceptance. *International Journal of Human-Computer Studies (IJHCS). 64(2) 53-78.*

Taylor, S., & Todd, P. (1995a). Assessing it usage: The role of prior experience. *MIS Quarterly (19:4)., pp. 561-570.*

Taylor, S., & Todd, P. (1995b). Understanding information technology usage: A test of competing models. *Information Systems Research*, (6:4), pp. 144-176.

The Central Institution for Statistics. *The statistical book of the year 2007/2008*

Thompson, R. L., Higgins, C. A. & Howell, J. M. (1991). Personal computing: Toward a conceptual model of utilization. *MIS Quarterly,* (15:1). 1991, pp. 124-143.

Thomsen, E. (2002). *OLAP solutions: Building multidimensional information systems.* New York, Chichester: John Wiley & Sons.

Tibenderana, p. & Ogao, p. (2008). Information communication technologies acceptance and use among university communities in uganda: A model for hybrid library services end-users. *International Journal of Computing and ICT Research, Special Issue Vol. 1, No. 1, October 2008.*

Todd, P. & Benbasat, I. (1999). Evaluating the impact of DSS, cognitive effort, and incentives on strategy selection. *Information Systems Research, Vol. 10, Iss. 4; Pg. 356.*

Tomatsky, L., Eveland, J., Boylan, M., Jetmer, W., Johnson, E., Roitman, D. and Schneider, J., (1983). *The Process of Technological Innovation: Reviewing the Literature*, Washington, DC: National Science Foundation, 1983

Triandis, H. (1977). *Interpersonal behavior.* Brooke/ Cole, Monterey, CA, 1977.

Triandis, H. (1979). Values, attitudes, and interpersonal behavior. *Nebraska Symposium on Motivation*, 27, 195-259.

Trimmer, K., Beachboard, J., Wiggins, C., & Woodhouse, W. (2008). Electronic medical records use an examination of resident physician intentions. *Proceedings of the 41st Hawaii International Conference On System Sciences 7-10 Jan. 2008, 249 – 249,*

Turban, E., Aronson, J.E., Liang, T. & Sharda, R. (2007*). Decision support and business intelligence systems. 8th edition, Pearson Education*, Inc.,Upper Saddle River, New Jersey.

Turban, E., McLean, E. & Wetherbe, J. (2004). *Information technology for management transformations in the digital economy (4th edition).* Wiley.

Udoh, E. (2010). *The adoption of grid computing technology by organizations: A quantitative study using technology acceptance model.* PhD published Dissertation, Capella University UMI Number: 3397359.

Vallerand, R. (1997). *Toward a hierarchical model of intrinsic and extrinsic motivation, advances in experimental social psychology (29). M. Zanna (ed.).* Academic Press, New York, 1997. pp. 271-360.

Venkatesh, V. & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46, 2000, 186-204.

Venkatesh, V. & Zhang, X. (2010). Unified theory of acceptance and use of technology: U.S. vs. China, *Journal Of Global Information Technology Management*; 2010; 13, 1; ABE/Inform Global Pg. 5

Venkatesh, V. (1999). Creation of favorable user perceptions: Exploring the role of intrinsic motivation. *MIS Quarterly*, 23(2). 239-260.

Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research*, Vol. 11, No. 4, Pp. 342-365.

Venkatesh, V., & Davis, F. D. (1996). A model of the antecedents of perceived ease of use; Development and test. *Decision Sciences*, 27, 451-481.

Venkatesh, V., Morris, M. G. & Ackerman, P. L. (2000). A longitudinal field investigation of gender differences in individual technology adoption decision making processes. *Organizational Behavior and Human Decision Processes* (83:1). 2000, pp. 33-60.

Venkatesh, V., Morris, M. G., Davis, G. B. & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27:3, 2003, Pp. 425-478.

Venkatesh, V., Sykes, T. & Zhang, X.(2011). 'Just what the doctor ordered': A revised UTAUT for EMR system adoption and use by doctors, *Proceedings of the 44th Hawaii International Conference on System Sciences – 2011*

Vidich, A. J., & Lyman, S. M. (2000). *Qualitative methods: Their history in sociology and anthropology*. In N. K. Denzin & Y. S.Lincoln (Eds.),Handbook of qualitative research (2nd ed., pp. 37–84). Thousand Oaks, CA: Sage.

Visuvalingam, V. (2006). *A conceptual framework to explain technology acceptance of electronic negotiation utilizing software agents*. Master Thesis , Waterloo. Ontario, Canada, 2006.

Wan, G. & Che, P. (2004). Chinese air travelers' acceptance towards electronic ticketing. *International engineering management conference, 2004.*

Wang, H. & Yang, H. (2005). The role of personality traits in UTAUT model under online stocking. *Contemporary Management Research,* 1(1) 69-82.

Wang, T., Jong, D. & Liu, S. (2005). Conceptual inferred TAM by gender in cyberlearning. Proceedinf of the 3rd international conference on information technology: *Research and Education,* 2005. ITRE 2005. 2005 IEEE.

Wang, Y. S. & Shih, Y. W. (2009). Why do people use information kiosks? A validation of the unified theory of acceptance and use of technology. *Government Information Quarterly 26 (2009) 158–165.*

Weber, S. (1985). Cognitive processes involved in solving information systems (is) design problems. *Proceedings, third international conference on information systems (December). 305-12.*

Weiss, A., Bernhaupt, R., Tscheligi, M., Wollherr, D., Kühnlenz , K. & Buss, M. (2008). A methodological variation for acceptance evaluation of human-robot interaction in public places. *Proceedings of the 17th IEEE international symposium on robot and human interactive communication, Technische Universität München, Munich, Germany, August 1-3, 2008.*

Welie, M., Veer, V.G.C., & Eliens, A. (1999). Breaking down usability. SASSE, M.A., Johnson, C. (Eds). *International conference on Human-computer Interaction, IOS Press, Amsterdam.*

Wheeler, J. (2003). *Collaborative conflict and strategic decision making: Modeling organizational factors for decision commitment.* PhD dissertation, OHE University of Tennessee, Knoxville University of Nebraska-Lincoln.

Williams, G. & Miller, R. (2002). Change the way you persuade. *Harvard Business Review. May.* pp. 65-73.

Williams, P. (2009). *Assessing mobile learning effectiveness and acceptance*. PhD Thesis, The George Washington University, Columbia, USA.

Williams, R. (2006). Leadership for school reform: do principal decision-making styles reflect a collaborative approach?. *Canadian Journal of Educational Administration and Policy*, Issue #53, May 25, 2006.

Wu, M., Chou, H., Shih, Y. & Wang, G. (2011). Supply chain performance improvement through partner relationship management in the high tech industry. *International Journal of Management Science and Engineering Management,* 6(3): 210-218, 2011.

Yeow,P. & Loo W.H.,(2009). Acceptability of ATM and Transit Applications Embedded in Multipurpose Smart Identity Card: An Exploratory Study in Malaysia, *International Journal of Electronic Government Research, 5(2), 37-56,* April-June 2009

Yi, X., & Uen, J. F. (2006). Relationship between organizational socialization and organizational identification of professionals: Moderating effects of

personal work experience and growth need strength. *Journal of American Academy of Business, 10, 362-371*

Yousef, D. A. (1998). Predictors of decision-making styles in a non-western country. *Leadership and Organization Development Journal*, 19(7). 366-373.

Yu, J., Ha, I., Choi, M. & Rho, J. (2005). Extending the TAM for a T-commerce. *Information & Management*, 42(7). 965-976.

Zain, M., Roseb, R.C., Abdullahc, I. & Masromd, M. (2005). The relationship between information technology acceptance and organizational agility in Malaysia. *Information & Management*, 42 (6). 829-839.

Zhao, X., Jr., J. & Chen, Q. (2009). Reconsidering Baron and Kenny: Myths and Truths about Mediation Analysis, Journal of Consumer Research, *June 2009*

Zinkhan, G., Joachimsthaler, E.A. & Kinnerar, T.C. (1987). Individual differences and marketing decision support system usage and satisfaction. *Journal of Marketing Research*, Vol, Xxiv, May 1987.